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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BELLINGER, JASON R

ART UNIT	PAPER NUMBER
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3617

MAIL DATE	DELIVERY MODE
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04/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,558	Applicant(s) CARETTA ET AL.	
	Examiner Jason R. Bellinger	Art Unit 3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54-132 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 54-132 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Specification

1. The abstract of the disclosure is objected to because it is a copy of the first page of the PCT (see below). Correction is required. See MPEP § 608.01(b).

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

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- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

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- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

2. The disclosure, including the abstract, is objected to because of the following informalities: The term “tyre” should be replaced with the term --tire-- throughout the specification and abstract, for grammatical clarity. The term “optimising” should be replaced with the term --optimizing-- throughout the specification for grammatical clarity.

Appropriate correction is required.

Claim Objections

3. Claims 54-132 are objected to because of the following informalities: The term “tyre” should be replaced with the term --tire-- throughout the claims, for grammatical clarity.

In claims 57-68, 79-90, and 110-121, the phrase beginning with “with respect to...” should be removed, due to the fact that this phrase is redundant.

In claim 76, line 7 and claim 107, line 2, the term “a” should be removed, for grammatical clarity.

It appears that the second instance of the term "decreasing" should be replaced with the term --increasing-- in claims 95 and 123 to correspond to similar claim 74.

Claim 125 is missing punctuation at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 102 and 128 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "major" in claims 102 and 128 is a relative term which renders the claims indefinite. The term "major" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. No qualitative or quantitative limitations have been provided to clearly define this term.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 54-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rheinhardt in view of Vaughn and in further view of Alonso et al. Rheinhardt shows a wheel having an integral air tank 30, which includes compressed air stored at a higher pressure than the pressure of air retained within the tire 10. A valve 40 communicates between the tank 30 and the interior of the tire 10 to allow pressurized air from the tank to flow into the tire 10 when the air pressure in the tire drops below a predetermined value. The tank 30 includes an inflation valve 20.

Rheinhardt also discloses that the valve 40 may function (i.e. open and close) in response to changes in air temperature. Rheinhardt, however, does not disclose the valve having an elastic element therein with an elastic constant that varies with temperature. Vaughn teaches the use of a valve including two concentrically arranged springs (16 and 20), wherein spring 16 is an elastic element responsive to temperature. Namely, the valve will open when the spring 16 responds to a decrease in temperature and vice versa (i.e. the elastic constant increases in response to decreasing temperature and vice versa). Spring 20 is external with respect to spring 16. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the tire inflation system of Rheinhardt with the temperature responsive valve of Vaughn as a substitute equivalent valve structure, dependent upon availability, cost, and the desired factors in determining how the tire pressure is regulated.

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Rheinhardt as modified by Vaughn does not disclose the elastic constant of the elastic element (spring 16 of Vaughn) varies within a temperature range of -50 to +50 degrees C. Alonso et al teaches the use of a valve 70 including an elastic element whose elastic constant varies within a temperature range of -1 to +49 degrees C. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the spring of the valve of Rheinhardt as modified by Vaughn from a material having the above properties, dependent on the desired operating range of the valve (i.e. the range of temperature over which the valve will control tire pressure regulation), dependent upon the environment, etc.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the value of the elastic constant of the spring measured at the low range differs from the value measured at the high range by at least 10% and no more than 40%. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the spring with elastic constant values suitable to prevent frequent opening and closing of the valve, thus preventing rapid changes in tire pressure.

Rheinhardt as modified by Vaughn and Alonso et al does not specify the ratio between the operating pressure of the tire and the tank being 0.1 to about 0.6, or that the pressure in the air tank is between 8-12 bars. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the relationship between the air tank and tire in such a way to optimize the size to weight ratio of the wheel assembly with respect to tire pressure regulation capabilities.

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Rheinhardt as modified by Vaughn and Alonso et al does not specify that the valve opens with the tire pressure drops by at least 5% with respect to the operating pressure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange for the valve to open at any suitable pressure difference in order to reduce wear on the tire due to being under-inflated, and to prevent any handling issues with the vehicle due to under-inflated tires.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the second spring (20 of Vaughn) supports 60-95% of the load supported by the elastic element (i.e. both springs) as a whole or that the second spring has a substantially constant elastic constant over the temperature range. Vaughn is silent regarding the elastic constant of the second spring 20; however it is clear by the disclosure of Vaughn that only the first spring 16 has a variable elastic constant over a temperature range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the second spring 20 of Vaughn would have a substantially constant elastic constant over the same temperature range as the first spring 16.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the second spring 20 to support 60-95% of the load for the purpose of allowing the first spring to solely respond to temperature changes as opposed to a mix of temperature and load (or pressure) changes.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference shows temperature responsive valves.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Bellinger whose telephone number is 571-272-6680. The examiner can normally be reached on Mon - Thurs (9:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Bellinger/
Primary Examiner
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